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GENERAL DIRECTIONS,

FOR

COLLECTING AND PRESERVING ARTICLES

IN THE VARIOUS DEPARTMENTS OF

NATURAL HISTORY:

RESPECTFULLY SUBMITTED BY THE

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AND ALL LOVERS OF NATURE AND OF NATURE'S HANDY WORKS,
WHO ARE WILLING TO LEND THEIR AID IN PROMOTING
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PROGRESS OF THE ARTS.

PROVIDENCE:
J. C. PARMENTER.....PRINTER.

1829.

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DIRECTIONS.

RECIPES,

For protecting the Skins of Animals from the attacks of Insects, and from decay, and also for preserving specimens from decomposition.

No. 1.—Arsenical Soap.

Take of Camphor, . . .	2 1-2 ounces,
Arsenic in powder,	1 pound,
White or Castile Soap,	1 do.
Pearlash, ...	6 ounces,
Lime in powder, .	2 ounces.

Cut the soap into fine shavings, and put it into a kettle over a slow fire, with a small quantity of water, stirring it frequently with a wooden spoon. So soon as it is well melted, mix in the pearlash and powdered lime. Then remove from the fire, add the arsenic, and rub gently together. Finally, put in the camphor; previously reduced to powder, in a mortar, by the addition of a few drops of spirits. Let all the ingredients be intimately combined. Keep it secure in a jar or other suitable vessel, as it is an *active poison*.

No. 2.—Pyroligneous Acid.

This may be laid on two or three times with a brush.

No. 3.—Solution of Corrosive Sublimate.

In Spirits of Wine.—Dissolve one ounce of Corrosive Sublimate in half a pint of Wine.

Do. In Water. Take of Oxymuriate of Mercury, (Corrosive Sublimate,) 1 ounce—Sal Ammoniac powdered, 35 grains—Pure Water, 1-2 pint. Dissolve.

Small animals or other articles intended to be brought home whole, that can be easily preserved in liquids, may be immersed either in spirits, or one of the following solutions.

No. 4.—Solution of Common Salt.

Add three pounds of clean salt to a gallon of clear water. Dissolve and strain. This makes a saturated solution; but it should be used a little weaker than this; for which reason, half an ounce ~~of clear water~~ should be added to every quart of the above. All articles should be well washed in fresh water, previous to being put in this.

No. 5.—Chloride of Lime.

This is the common bleaching salts, and can be easily and cheaply obtained in almost every place. The powder should be kept from exposure to air and moisture. From one dram to half an ounce, or more or less, according to circumstances, may be added to a pint of water.* This article may also be used to destroy smell, or check putrefaction, in substances that are drying or undergoing other preparatory steps to be preserved. It should indeed be kept on board of all

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* As it is not all dissolved the water must be strained in order to procure a transparent solution.

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vessels, being perhaps the most certain disinfecting agent known. The solution may be sprinkled over the decks and throughout the holds, frequently.

No. 6.—*Sulphurous Acid.*

This has been lately very highly recommended by Dr. John Davy. Its advantages are triple; it is cheap, durable, and clearly displays minute structure. It does not, like alum, or alcohol, contract what is immersed in it, nor does it like solutions of nitre and other salts, lose its transparency and become turbid. Dr. D. has preparations that have been made three years, and nothing has been done to them all that time; no fluid has been added; no evaporation has taken place, and they are as perfect as when first immersed in the acid. They are merely placed in bottles with glass stoppers, lubricated with a little cerate. This acid is prepared in an economical and easy manner, by burning sulphur matches over water, in any appropriate vessel; (a large tumbler will answer;) agitating the water, when the match ceases to burn; and when the water is sufficiently impregnated with the acid gas, filtering the solution to render it clear and transparent. If the article to be preserved shews any indications of putrefaction, it should be put in a solution of Chloride of Lime, till deprived of its putrid smell and tendency, and then washed clean; after which it may be put into the acid solution, without danger of spoiling.

No. 7.—*Molasses Mixture.*

According to Sir George Mackenzie, articles may be preserved in casks, &c. by filling them with a mixture composed of one measure of Molasses, one of salt, and fifteen or sixteen of water. If the vessels be of wood, two small holes should be left open for the escape of air, and the introduction of additional liquid for twenty-four hours, when the apertures may be closed. In glass vessels the removal of the stoppers will of course answer for the holes. He has specimens that have been preserved four months in this way.

A number of Recipes have been given, as one preparation may sometimes be more easily obtained than the others.*

No. 8.—*Cement.*

It will be advisable to secure all bottles with corks in preference to glass stoppers, and seal them with a compound made of the following materials, viz.

Rosin, 2 parts—Yellow Wax, 1 part—Red Ochre, or pounded brick, sufficient quantity to colour.

It is useful, again to cover the bottles thus closed, with a piece of cloth, firmly tied, and covered with liquid pitch; and for large bottles, to support the corks with a string, which, by being fastened to the circumference of the bottle, forms a cross above the corks.

ANIMAL KINGDOM.

Fishes, Serpents, Reptiles, &c.

There is no species, that can be met with, but what it is desirable to procure; they varying much with the climate, and the country, and even the sea, river, and lake, in which they may be found. The smaller kinds may be preserved in spirits contained in wooden, or glass vessels; the latter being preferable. Any kind of spirit will answer, though the most colorless, will on some accounts be best. Either No. 4, 5, 6, or 7 may be substituted if more convenient. When too large to be thus preserved, the dried skin may be sent, care being taken to preserve the fins and head. *Fish*, without scales, may have their skins separated, by dividing them at the point where the body and chin joins; bending back the head, and cautiously detaching the skin from the body, and drawing it off, as in skinning eels. Then dust it well with pepper, or wash it with No. 1, or soak it for a few hours in No. 3, having previously washed it thoroughly with soap suds, in order to remove the mucus, or slime, that may cover it. Then turn it right side out, and stuff with tow, cotton, saw dust, or dry sand, and sew up the opening. The tongue, gills, and eyes, should be removed unless quite small. To prevent the sand or other article from escaping by the mouth, fill it with oakum, or tow. Afterwards wash the outside with No. 1, 2, or 3, cover with tow, and pack in boxes. If the fish have scales, caution is required not to rub them off. We must here cut the fish as before, but instead of drawing the skin off in a similar manner, we must separate it, by a piece of thin flat wood, or iron, like the following,

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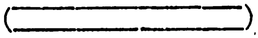
* Nos. 3, 4 and 5, should be preferred to Nos. 6 and 7, when they can be as easily procured, as from longer use, their preservative qualities have been more satisfactorily tested.



of such a length as to reach from one end of the fish to the other. The fins may be also thus separated, should there be no more convenient instrument at hand for the purpose. The following plan may also be pursued. Let the fish be split lengthwise, carefully preserving the fins and tail on one half; than separate the skin from the flesh, fat, &c. Afterwards, having washed it as previously directed, fasten it on a board, giving it the natural appearance, by packing tow or other substances underneath; lastly varnish it.

Serpents, *Frogs*, *Lizards*, *&c.* may be skinned through their mouths, by opening their jaws, and dividing the back bone high up; care being taken not to cut the skin. When the bodies are too large to pass through the mouth, make an incision on the side of the neck, divide the body, and take it out in two pieces. Having washed the skin as usual, turn the true side out, and holding it suspended by the jaws, pour in sufficient sand, sawdust, or bran, to completely fill the whole length. In skinning *lizards*, care must be taken not to break their tails. *Snakes*, previous to drying, should be placed as nearly as possible in their natural position, and then varnished. Where time will not admit of paying the above attention, the skins, properly washed and dried, and dusted with pepper, or other strong aromatics, might be packed away, and brought in that state.

Tortoises may be preserved, by separating the skin of the hind extremities from the upper shell; the lower shell may be separated at its junction with the upper, drawing out the legs and neck. After washing, fill with sand, and dry. Procure a male and female, when practicable. If any of the above be too large to preserve in the manner abovementioned, the skeletons may be kept; removing as much of the flesh as can conveniently be done, and drying the bones without taking them apart. If convenient wash occasionally whilst drying, with No. 2 or No. 5. Pack in tow, moss, leaves, dry sand, &c.; if too long to pack easy, divide into two or three parts.

QUADRUPEDS.

When small, they may be preserved in spirits, or in No. 4, 5, 6, or 7; but when large, they should be skinned; care being taken to leave the bones of the feet and head in. (The brains of course being removed.) If the whole skull cannot be preserved, let the jaws be sent. To procure the skin, cut it open on the belly of the animal, turning back the hairs to the right and left; separate it from the body, and skin out the hind legs without splitting the skin. Detach the tail, and continue to strip the skin off of the body until you come to the fore legs; serving these as you did the hind ones, go on separating as far as the skull, and if possible skin over the head, until you reach the jaws, and cut away all the flesh. Separate the body at the skull. Having washed the inside as directed in the preceding section, filled with tow, &c. and sprinkled the exterior, the skin is ready for packing. No directions are given for mounting animals, as this would require more time, and such specimens would take up more room, than could conveniently be spared; particularly on board of ships. Skeletons of animals would be very acceptable. The bones being boiled to admit of an easy removal of the flesh, and subsequently dried, might be put into a bag, and packed with moss, cotton, dry sea-weed, or any other soft substance, that will prevent their injuring each other. All the small and fragile bones should be carefully wrapped up; and those belonging to the same part, should be in the same envelope. No bone, however small, should be lost.

BIRDS.

There are two methods employed in skinning these. The *first* consists in carefully separating the feathers from the breast to the tail, and dividing the skin so far, as to be able to draw out the legs, and separate them from the body; then cut off the flesh from them, but leave the bones with the skin. Detach the tail, and invert the skin towards the head, letting the small bone near the tail remain with the skin, or the tail feathers will be liable to fall off. Di-joint the wings, and dissect off the flesh, leaving the bones as in the legs. Continue to draw off the skin, until you arrive at the skull, then cut off a piece of this with the neck, which will separate the body from the head. Remove from the skull, the flesh and brains. To prevent the feathers at the edges of the incision from being soiled, during skinning, pin pieces of paper over them. In the *second* method, the incision is made under the wing. Disjoint the wing, and commence skinning towards the neck; when you have reached this, separate it, and continue towards the other wing; proceed in this manner until you get the skin from the body. Then remove the flesh from the wings and legs, and skin out the neck. The tongue and eyes should also be removed. Having properly washed the skin, stuff with sufficient tow to prevent the sides from adhering, and pack until time will allow of setting them up; when they may easily be rendered supple, by introducing a cloth wet with warm water. If possible, a male and female, old and young, should be procured; for birds alter so materially from these circumstances, as sometimes to be mistaken for distinct and even new species. The skeletons of large birds should also be procured; and the nests and eggs of all. The latter may be preserved, by making a hole in one end, emptying them of their contents, and filling with wax, or leaving them empty. In shooting, proportion your shot to the different sizes of birds. When killed, wipe away as much of the blood as possible, sprinkle fine dry sand upon the wound, and put a little cotton, tow, or moss, in the beak, to prevent blood from flowing and soiling the plumage. When soiled, clean with sponge and warm water. There will be little danger of soiling the exterior, if we wait until the head has become cold, and the blood coagulated. It may then be taken by the tail and claws, placed in paper twisted in the form of a cone, and be carried to the place selected for skinning.

INSECTS.

In catching these, caution must be used not to injure them, by breaking their legs, wings, and more particularly feelers; or by destroying their colors. The beetle tribe may be killed, by immersion in spirits of wine, or hot water; and also, (as well as other insects,) by touching their heads with spirits of turpentine; or by putting them under an inverted tumbler, and filling it with sulphur fumes, by means of lighted matches, held under one edge, placed near the end of the table. All insects, save butterflies, and those consisting of a soft substance, may be packed in boxes, by making alternate layers of sand and insects. Butterflies must be pinned into boxes; and spiders, ants, and other soft animals, put into spirits. Procure, when possible, the caterpillar of the butterfly. If only the former be met with, it should be put in a box having a small air hole, and be furnished with such leaves as it feeds upon. It will eventually transform itself. The eggs, and various productions should be obtained; also a male and female; a specimen of the plants on which they feed, &c. Those used in medicine, in dyeing and other processes, are more especially to be procured, and all information relating to them collected.

General Remarks.

In packing skins, care should be taken to dislodge all insects; then wash the inside with No. 2 or 3, or pass over it with a brush dipped in spirits of turpentine; and pack in cotton or other light article, imbued with camphor, turpentine, or similar substances. For want of these, use a strong decoction of bitter and aromatic herbs; besprinkling both sides with powdered tobacco, or all spice. The box containing them should be covered with pitch, to exclude air and moisture. Previous to putting subjects into bottles, they should be freed from all filth and dirt wherewith they may be soiled. Care should also be taken to have them properly suspended, so as not to touch the bottom of the vessel, as this will be liable to occasion their destruction, by the mucus there deposited. If the glass be large, and the specimens small, several of the latter might be put into one vessel, by suspending them at different heights. A small incision should be made in the bellies of animals with a spinal column, that the liquor may have access to the interior. Some few days after immersion, the vessels are to be filled up, in order to supply the deficiency of fluid, and to insure a more perfect preservation. They are then to be corked, and sealed as directed under the article *Cement;* No. 8. All zoological specimens, when packed, ought to be numbered, and a corresponding number entered into a book, where should be noted all the particulars relating thereto, that can be obtained; such as the names of the animal; the uses to which it, (or the several parts of it,) is put; whether employed for food; is innocuous or poisonous; docile or ferocious; its haunts; its habits; whether any peculiar qualities be attributed to it, &c. &c. These numbers should be made in a manner, not easily to be destroyed; the best way would be, to cut them on wood; deeply mark them on tin; or paint them on either. For many reasons, written labels would not be suitable.

SHELLS, &c.

If these be found with the animals in them, boil them for a few minutes, and then remove the contents. Afterwards rub with sweet oil, or strong soap suds, by means of woollen or cotton cloth. Unless there be some external covering, or appendage, so delicate, that it would suffer injury, by such a method of cleaning. If the shell consist of more than one piece, keep all the parts together, and be particularly cautious that the hinge is not injured. Land and fresh water shells should be obtained, as well as those of the sea. Also, *crabs, lobsters,* &c.; the shells only, of the larger ones need be sent, *and should be well washed in fresh water,* before drying. The smaller crustaceous animals that may be preserved in spirits, should also be first well washed, to remove all foreign matter; otherwise they may be lost, notwithstanding their immersion in spirits. All but the last mentioned may be kept safe, by packing in sand, as mentioned in the section on Insects. Corals, Brainstones, Sponges, &c. &c. should also be collected. The places where found, should be carefully noted down; also their habits, uses, popular names, both among landsmen and seamen, &c. &c. as directed in the preceding section.

PLANTS.

To preserve these, they may be placed between folds of newspapers, or the leaves of large books, and a sufficient weight put on top to keep them smooth, when dry. The whole of small plants, even to the roots, may be taken; if large ones, branches—in flower if at the proper season,—twelve or more inches long. But few ought to be put in between the same folds or leaves, otherwise they will be liable to mould. Should they shew indications of this, they must be exposed for a few minutes to the sun, or be shifted to other papers. When dry, they may be gently washed with a dilute solution of corrosive sublimate, to defend them from insects; if too strong it will change their color; care is therefore requisite. In humid countries, and moist seasons, their drying had better be expedited by artificial heat. Put several, separated from each other, by sheets of paper, between two planks, and place them in a stove, or oven, after bread is taken out; when dry, change the papers. Those that are very watery, and apt to continue vegetating for months after gathering, should, as soon as procured, be plunged a minute or two, into boiling water, and then be placed between folds of paper; they will rapidly dry, as this process will have deprived them of life. The plant should be so placed, as to show its natural position whilst growing. These herbals, or books of plants, when perfectly dry, should be packed in boxes well covered with liquid pitch, to prevent the depredations of mice, insects, &c. It will also be well to inclose in the box a little camphor, or cotton soaked in turpentine, or some other aromatic substance. Fruits should also be gathered; the dried ones packed in boxes, with numbers corresponding to those of the dried plants, to which they belong, and the pulpy preserved in spirits. There should also be collected, gums, resins, and other productions of trees; also seeds of plants not growing with us; care being taken that they are perfectly ripe, and well wrapped up to defend them from moisture, or they will be useless. Nor should medicinal plants be forgotten, and those supposed by the inhabitants to be possessed of healing properties; together with a notice of the diseases in which they are used, and the mode of administering them; vegetable poisons, with an account of their peculiar powers; the woods employed for building, dyeing, &c.; these may be a few inches long, and if practicable the usual width of the tree; both a transverse, and longitudinal section should be made. Numbers should be attached to them, corresponding to those of the dried specimens, (from branches of the same trees,) in the herbal; as we are still in ignorance with regard to what trees, many woods used in medicine, and the arts, belong. To all of the above articles, notes should be added, mentioning every important particular relating to them.

MINERALS.

Specimens of rocks, stones, metals, volcanic productions, &c. whether handsome or not, whether the names are known or not, should be collected. Upon visiting localities, quarries, mines, &c. remember to take, in addition to the ores, &c. a specimen of the rock in which they are imbedded, together with all associated minerals. Gather all the particulars concerning the working of the mine, quarry, &c. that may prove interesting or useful. The size of specimens may be from one to four inches square, unless a petrifaction be enclosed, when the whole should be secured if possible. From volcanic districts, procure specimens of the various substances thrown out by the eruption; some being in the state of stone, others of glass, or of scoriæ, or of lava. Where earths containing organic remains are met with, such as shells, corals, bones and teeth of animals, fossil wood, impressions of vegetables, stems, roots, leaves, &c. specimens of the different articles should be secured, enveloped in the earth, or rock, in which they were were fixed; being of the greatest importance in stamping the character of the strata, or bed, in which they occur. The bones and teeth of animals are not unfrequently found in the more ancient gravels, and in the earth forming the floors of caverns; the collecting of these from distant parts of the globe, is an object of the greatest interest to Geology. Sands of shores, and rivers, should be collected; and from the latter, as high up from their entrance into the sea as possible. Whenever any insulated masses are found, supposed by the inhabitants to have fallen from the sky, or been transported from a distance, specimens should be taken therefrom, with a notice of all the important particulars relating to them. Specimens ought not, if possible, to be taken from loose pieces; but from large masses in their original situation, or but lately removed. Fresh pieces should be broken off, as those that have been exposed to the weather for any length of time, may be thereby materially altered. Specimens of all of the most characteristic varieties must be selected. One of the best situations for procuring these, and examining rocks, is in the section afforded by cliffs on the sea shore. If it be desirable to obtain a specimen from a rock, which, owing to its height, is inaccessible, and it be found to incline more or less to the horizon, observe the direction in which it dips, and by following the course a short distance, you will probably be enabled to supply yourself. A sketch of a coast, or cliff, however slight, frequently conveys more information, respecting the disposition and relation of rocks, than a long memorandum. In this case, numbers should be marked on the sketch, corresponding to the layers from whence the specimens with similar numbers were taken. A person should not be deterred from collecting, by seeing that the place he happens to visit, has a forbidding aspect; or the rocks, nothing attracting in their appearance; for it is frequently the case, that facts and specimens in themselves of little consequence, become valuable by subsequent comparison; therefore scarcely any observation, accurately recorded, will be thrown away. All specimens should be wrapped in tow, cotton, moss, or leaves, and then in paper; the label mentioning locality, &c. being enclosed. These should afterwards be tightly packed in a box, so as to preclude the least motion; and the outside be well defended from air, moisture, &c. by a coating of pitch.

There are many articles not enumerated under either of the preceding heads, that would nevertheless be very acceptable. Such as dresses, ornaments, culinary utensils, implements of husbandry, weapons of war, instruments of music, tools used in the arts, coins, &c. &c. Indeed almost any thing from abroad, illustrating the manners and customs of other people, however trifling in itself, or common where it belongs, will be an acquisition to a Cabinet intended to contain all that is curious, and more especially, all that is useful.

Any thing intended for the society may be directed—" To the Cabinet Keeper of the Franklin Society, care of Peter Grinnell and Sons, South Main-Street, Providence, R. I." Or if more convenient direct to Mr. Edmund Haviland, No. 306, Pearl-Street, New-York—Jno. P. and Charles Wetherill, No. 65 North Front-Street, Philadelphia; or Mr. Amos Binney, Jr. Boston; with a request to forward as above.

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